VIII. *Double Stars diſcovered in* 1779, *at* Frampton-houſe, Glamorganſhire. *By* Nathanael Pigott, *Eſq. F. R. S. Foreign Member of the Academies of* Bruſſels *and* Caen, *and Correſpondent of the Royal Academy of Sciences at* Paris; *communicated by* Nevil Maſkelyne, *D. D. F. R. S. and Aſtrononomer Royal.*

Read January 11, 1781.

TO THE REV. NEVIL MASKELYNE.

REV. SIR, October 27, 1779.

INCLOSED are the determinations of the places of three double ſtars, which I diſcovered this ſummer; at leaſt, I preſume, they have not been obſerved before, hecauſe I do not find them inſerted in Dr. BRADLEY's catalogue, publiſhed in the Nautical Almanac 1773, or in the *Connoiſſance des Tems*, no more than in other catalogues in my poſſeſſion. γ Delphini, indeed, is in M. DE LA CAILLE's catalogue; but not as a double ſtar. The inſtrument he uſed was not, probably, powerful enough for that purpoſe. In the two-feet teleſcope of my quadrant it appears only as a ſingle ſtar. Theſe ſtars were obſerved by me in a three-feet achromatic teleſcope of a tranſit inſtrument, with an object-glaſs near two inches diameter. The R. A. are nicely determined by ſeveral obſervations, which always agree with each to a fraction of a ſecond in time. The declinations

declinations were deduced from the difference of altitudes between the double ſtars and the known ſtars, to which they were compared, as ſhewn by the graduated ſemi-circle of the tranſit inſtrument, which, being divided to two minutes only, cannot be ſuppoſed to give any great preciſion: however, I believe, their declinations, hence deduced, to be correct to one minute, or one minute and a half.

In obſerving the double ſtar compared to ζ Pegaſi, I found it impoſſible to illuminate the wires of the tranſit inſtrument, without nearly obliterating the ſtar. This difficulty led me to a method, which, as it completely ſucceeded, may, under ſimilar circumſtances, poſſibly be of uſe to others. A perſon illuminating the wires very faintly, ſo that I could juſt perceive the double ſtar, at a ſignal totally withdrew the light: this ſignal I made when the double ſtar was nearly as far diſtant from the firſt wire as the five wires are diſtant from each other, which, in this caſe, was 13″ by the clock. I then counted the ſeconds, and did not fail to ſee the ſtar diſappear a ſecond or two within the time expected. On its diſappearing, I made a ſignal to write down; and then beginning to count again, did the ſame at each wire. I have ſince tried this method with other ſtars, and think they may be thus obſerved, even with greater preciſion than when the wires are illuminated. Hence the troubleſome buſineſs, well known to aſtronomers, of illuminating faint objects, may be removed.

The preceding ſtar of each double ſtar was obſerved on the firſt, third and fifth wires, and the following one on the ſecond and fourth wires; and thus their difference in R. A. in time, converted into parts of a great circle, obtained. Suppoſing the apparent R. A. and App. declinations of α Delphini, β Aquarii, and ζ Pegaſi, as here aſſumed, the places of theſe double ſtars were found to be as follows.

I beg you to communicate theſe obſervations to the Royal Society; and to receive my thanks for thoſe I received in your letter of the 7th inſtant.

I am, &c.

N. PIGOTT.

September 5, 1779.

App. R. A. °	′	″		App. declination. °	′	″	
307	21	5	α Delphini, 3d mag. -	15	8	53	N.
309	6	30	2d or brighteſt of γ Delphini 4.	15	20	40	N.
	0	9½	diff. R.A. of the 2 ſtars in γ Delphini.				

Note, both the ſtars in γ Delphini have the ſame, or nearly the ſame, declination. The 1ſt is of the 6th, the 2d of the 4th mag.

September 19.

319	59	27+	β Aquarii, 3d mag.	6	31	34	S.
318	3	21	preceding double ſtar, 5th mag.	7	40	34	S.
	0	11 –	diff. R.A. between 1ſt and 2d of the double ſtar.				

Note, the 1ſt ſeemed of the 5th, the 2d of the 7th mag. The 1ſt is perhaps 6″ or 8″ S. of the following one.

337	36	55+	ζ Pegaſi, 3d mag. -	9	41	24	N.
346	53	36½	double ſtar, 8th, 9th mag -	3	59	17	N.

Note, both the ſtars of this double ſtar have the ſame, or nearly the ſame, R. A.; their difference in declination is 15″ or perhaps 20″.